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GENERAL NOTES.

BOTANY.[1]

SOME NEW SPECIES OF SPHÆRIACEOUS FUNGI.—The four species here described were found on petioles of *Sabal serrulata*, at Green Cove Springs, Fla., during the winter of 1881–2, by Dr. Martin.

Diatrypella deusta E. and M.— Perithecia coriaceous, flask-shaped, about 3 mill. in diam., buried in the substance of the matrix, without any distinct stroma or circumscribing line, in elongated clusters of 6–12, the obtuse imperfectly quadrisulcate ostiola raising the epidermis into distinct ridges which appear blackened as if carbonized, and are often split longitudinally along their crest; asci lanceolate, 57–75 × 5½—7 μ. Sporidia cylindrical, curved, yellowish, 5½–7 × 1¼ μ.

Sphæria (Anthostomella) leucobasis E. and M.—Perithecia globose or subelliptical, about ⅓ mill. diam., buried in the matrix in definite groups, above which the epidermis is generally more or less blackened, the discolored patches mostly limited by a well-defined line which does not, however, penetrate deeply; ostiola obtuse, barely piercing the epidermis; asci cylindrical, 75–80 μ long; sporidia uniseriate, elliptical, brown, 11–13 × 5½–7 μ.

The substance of the petiole beneath the clusters of perithecia, is partially bleached so that a longitudinal section shows dull white blotches which indicate the presence of the fungus.

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[1] Edited by PROF. C. E. BESSEY, Ames, Iowa.

Sphæria sabalicola E. and M.—Gregarious or scattered, perithecia coriaceous with rather thick walls, about ⅓ mill. diam., covered by the epidermis which is raised into little obtusely conic projections around which the surface of the matrix is of a tawny color; asci clavate-cylindrical, 57 x 8 μ. Sporidia biseriate, oblong, 3-septate, brown, about 11 x 3½ μ.

Sphæria sabalensioides E. and M.—Perithecia scattered, minute, ¼ mill. diam., globose, covered, the short ostiolum barely piercing the epidermis and visible under the lens as a small black dot; asci 75–80 x 7½–9 μ. Paraphyses none; sporidia biseriate, elliptic-fusiform, appendiculate, yellowish, with a gelatinous envelop, 13–15 x 3½–3¾ μ. The short filiform appendages at each end of the sporidia are soon absorbed.

Sphæria sabalensis Cke., to which this is closely allied, has much longer sporidia (50 μ.).

To the above described species, which appear to be quite distinct from any of the species on Sabal published by Berkeley and Cooke, may be added:

Cercospora malvicola E. and M. (N. A. F. No. 821).—Amphigenous, minutely tufted on withered spots in the leaf; hyphæ gray, nodulose, sparingly branched, 90–114 μ. high; conidia terminal, narrow cylindrical or attenuated above, 5–7-septate, 75–95 μ. long. Differs from *C. malvarum* Sacc., in its shorter hyphæ and conidia, duller color and orbicular spots.—*J. B. Ellis and Dr. Geo. Martin.*

NEW FUNGI BY J. B. ELLIS.—*Cercospora cercidicola.*—On brown spots on living leaves of *Cercis canadensis.* Hyphæ fasciculate brown, 114 x 3½ μ., tips divaricate bearing the oblong-clavate, 3-septate (30–38 x 5–7 μ.) conidia,

Cercospora physalidis.—Amphigenous on white deciduous spots 1–2 mill. in diam. Hyphæ brown subnodulose, 45–55 x 5–5½ μ.; conidia clavate-cylindrical, faintly 5–8 septate 65–75 x 4 μ. On leaves of Physalis.

Cercospora euonymi. — Amphigenous on small white round spots, 1–2 mill. in diam., with a dark purple border. Hyphæ subnodulose brown, about 60 μ. high, conidia 50–65 x 7–8 μ. clavate-cylindrical 3–5-septate. On leaves of *Euonymus americana.*

Cercospora asclepiadis.—On *Asclepias cornuti.* Amphigenous, but mostly on the upper surface of the leaf, on suborbicular spots 1–3 mill. in diam., black at first but soon becoming white in the center, with a definite dark brown or nearly black raised border around which the leaf is stained purplish brown; hyphæ fasciculate subnodulose and sparingly toothed above, brown, 40–50 x 4 μ.; conidialinear-clavate, about 5-septate, hyaline, 80–120 x 3½–4 μ.

Quite different from *C. clavata* Ger., which is also found on several species of Asclepias.

Cercospora toxicodendri.—Snow white on black spots 1–2 mill. diam. Hyphæ short, 25–30 × 5½ μ., pale brown; conidia slender clavate, faintly multiseptate above, contracted below into a slender base, 50–60 × 5–6 μ. On leaves of *Rhus toxicodendron*, Newfield, N. J.

Septoria sisymbrii.—On withered faded spots. Perithecia minute, erumpent, scattered or in groups of 3–4 open above as if the apex had been torn away; spores linear, 1–2 septate, 30–40 × 3–3½ μ., mostly curved, ends rather obtuse. The spores scarcely differ from those of *S. siliquastri* Pass., but the habit is different.

Septoria pruni.—Perithecia immersed in dark brown deciduous spots, 1–3 mill. diam. Spores cylindrical curved, obtuse, 4–6-septate, 30–50 × 2 μ. On leaves of *Prunus americana.*

The above species, except the one noted, were collected in the vicinity of Lexington, Ky., by Professor W. A. Kellerman.

The measurements are in millimeters (mill.) and micromillimeters μ., *i. e.*, thousandths of a millimeter.—*J. B. Ellis, Newfield, N. J.*

Pacific Coast Botany.—Our botanists of the western coast are showing a most commendable activity, worthy of imitation by those of the older portions of the country. Not content with the possession of the finest local flora of any country in their "Botany of California," they are pushing on with a vigor which will without much doubt enable them to complete the systematic disposition of all their native plants long before it can be done for any other part of the United States. The fungi of the coast have been carefully collected and catalogued by Harkness and Moore; Anderson has helped to make known the seaweeds of the coast, many of which have been distributed in Farlow, Anderson, and Eaton's "Algæ Am. Bor. Exsiccatæ." The lichens collected have been submitted to Professor Tuckerman for study, while the mosses and ferns were admirably worked in "Botany of California." All this implies persistent collecting, and good collecting at that. That the search for plants is carefully carried on may be shown by a reference to our two botanical journals, the *Torrey Bulletin*, and the *Botanical Gazette*, in which descriptions of new species crowd upon one another in rapid succession. The sets of plants now offered by the many collectors bring the coast flora within the reach of every one. We have recently examined plants of several of these sets—notably those of G. R. Vasey, the Parrish Bros., San Bernardino, Cal.; M. E. Jones, now of Salt Lake City; J. G. Lemmon, of Oakland, Cal., and find them to be most excellent. Among the plants sent out by Parrish Bros., are some very interesting Southern Californian species new to science, or but recently described. Likewise among Mr. Lemmon's ferns, are several new ones, and several other rare ones.

In Oregon, Professor G. H. Collier, of Eugene City, has just published a " List of the trees of Oregon," an eight page pamphlet, giving "the maximum observed height and diameter" of fifty-seven trees, with the local names and occasional remarks as to habitat or economic uses. Thomas Howell, of Arthur, Oregon, has also issued a "Catalogue of the Plants of Oregon" which, although defective in some particulars, is valuable as being based upon actual collections.

The last thing we have from our western botanists is Professor Rattan's third and much enlarged and improved edition of his " Popular California Flora." The introductory lessons contain many fresh notes and illustrations that are interesting, as for example, that on the germination of the big-root (*Megarrhiza*) on p. IX, and one on the germination of lupines on p. X. The Flora proper furnishes a handy manual for the study of the commoner and easier plants of Central California.

GRAY'S "CONTRIBUTIONS TO NORTH AMERICAN BOTANY."—In this we have: I. Studies of Aster and Solidago in the older herbaria, and, II. Characters of the new plants of certain recent collections, mainly in Arizona and adjacent regions. The first is of great interest to North American botanists, as it is the result of Dr. Gray's studies in the great herbaria of the old world, during his recent visit to England and the continent of Europe. The introductory paragraph is so suggestive that we reproduce it here entire.

" Aster and Solidago in North America, like Hieracium in Europe, are among the larger and doubtless the most intractable genera of the great order to which they belong. In these two genera, along with much uncertainty in the limitation of the species as they occur in nature, there is an added difficulty growing out of the fact that many of the earlier ones were founded upon cultivated plants, some of which had already been long in the gardens, where they have undergone such changes that it has not been easy, and in several cases not yet possible, to identify them with wild originals. Late flowering Compositæ, and Asters especially, are apt to alter their appearance under cultivation in European gardens. For some, the season of growth is not long enough to assure normal and complete development, and upon many the difference in climate and exposure seems to tell in unusual measure upon the ramification, inflorescence and involucral bracts, which afford principal and comparatively stable characters to the species as we find them in their native haunts. I am not very confident of the success of my prolonged endeavors to put these genera into proper order and to fix the nomenclature of the older species; and in certain groups absolute or practical definition of the species by written characters or descriptions is beyond my powers. But no one has ever seen so many of the type-specimens of the species as I have, nor given more time to the systematic study of these genera. * * *

"It is noticeable that the herbarium of Nees von Esenbeck for Aster is not referred to. *I cannot ascertain what has become of it.* But the types of several of his species, or specimens named by him, have been met with in other herbaria, especially in that of Lindley, and that of Schultz, Bip., the latter now a part of the large collection of Dr. Cosson. As to Asters, I do not here attempt anything beyond a report of the main results of the study of certain principal herbaria; and I leave the high northern and far western species out of the present view."

ZOÖLOGY.

HABITS OF FRESH-WATER CRUSTACEA.—No one branch of biological study is now bringing forth more interesting and every way useful results than embryology. Throwing light as it does, not only on questions of classification and theoretical biology, but also on the application of such theories to practical life, this new science may be termed at once the root and most typical fruit of a revolutionized biology. No other science furnishes a better illustration of the value of minute, accurate study of the most common and apparently insignificant facts. Sets of isolated facts evolved by conscientious study of different men spring suddenly into line when once the clue is found, and the result may be a new law which renders all these facts eloquent.

To the systematist the merely external study of life histories is of greatest value as a check against redundancy in classification, and furnishes the only reliable method, among lower forms at least, of setting the bounds of species.

Many eminent monographers have been obliged to considerably augment the nomenclature of their specialty with names which, later, have proved to apply simply to larval or immature forms, on account of the impossibility of following the whole life history of each individual.

To confine ourselves to the class Crustacea, many instances of this sort could be recounted. The best known is perhaps that of the common Cyclops which in the earlier days of carcinology enjoyed as many as three names between its exclusion from the egg and maturity. The discovery of the earlier stages in the life of Cyclops opened a new vista in the whole subject, and now we recognize a "*Nauplius stage*" in the life-history of nearly every crustacean.

It has been more recently discovered that similar opportunities for error are afforded by the difficulty of distinguishing the ultimate stage in an animal's life. It has been shown that the functions of reproduction are anomalous in the lower animals. Espe-